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BULLETIN
— of the —
**Manitoba
Medical
Association**

May, 1933



Vol. XIII.

No. 5

Manitoba Medical Association

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BULLETIN

of the
Manitoba Medical Association

MAY, 1933

Published Monthly by the
MANITOBA MEDICAL ASSOCIATION

Editorial Office:
101 MEDICAL ARTS BUILDING, WINNIPEG

Editor—C. W. MacCHARLES

Medical Historian—ROSS MITCHELL

*Editorial or other opinion expressed in this Bulletin is not necessarily
sanctioned by the Manitoba Medical Association.*

The Place of an Out-Patient Department in the Medical Services for a Community

HOSPITAL out-patient departments have been discussed from various points of view during the past few months. Any rational plan for such a department must keep in mind one basic principle, and that is that it is only a small part of the general medical service provided for the community. To be of value, it must have a well-defined function to perform, and not be in conflict with any of the other existing services.

An out-patient department, as usually constituted in this part of the world, consists of various free clinics, to which patients, whenever they care to do so, present themselves for examination and treatment. It attempts to provide a complete medical service. It is not reserved for those who require special investigation or treatment. The professional services are provided free by members of the attending staff of the hospital.

It is obvious that an unnecessary increase in the number of patients making use of an out-patient department not only takes an unfair advantage of the free services of the medical profession, but also puts an unjust burden on the financial resources of the hospital. The needs of the medical school are not, in themselves, sufficient justification for maintaining an out-patient department. The whole system can function, only provided the population generally is one that shows no marked tendency to take services for nothing when they are in a position to pay for them.

There have been various definite objections made against the out-patient departments of the Winnipeg hospitals. The first is that patients who are well able to pay some fee for medical services make use of these clinics. The second is that there has been a tendency on the part of the hospital authorities, particularly the social workers, to show unnecessary zeal in encouraging the use of the clinics. Another difficulty has been that the clinics have been so overcrowded that it has been very difficult to do all the work properly. From the point of view of clinical teaching, the clinics have long since become so large that it is difficult for the attending staff to find time to spend in teaching students. It is further well known to members of the attending staffs of

hospitals that many people attend the clinics, who, even if they were in receipt of good salaries, would not bother to consult a doctor if they were required to pay for their services. In this connection, it is an interesting point that, since one of the largest out-patient departments in Winnipeg has closed, there has been no sudden increase in the number of charity cases applying to doctors for treatment, and there has been no appreciable increase in the number of patients that it has been necessary to admit to the public wards of the hospitals. Allowance must be made, of course, for the fact that there is normally a falling off in the incidence of sickness at the present time of the year.

The future of the hospital out-patient department is yet to be determined. There is a large section of the medical profession of Winnipeg who believe that all out-patient departments should be closed and kept closed. Every medical man in general practice sees a certain number of patients who are unable, or unwilling, to pay for medical attention. However, he has the advantage of knowing in most cases, or being in a position to find out, whether or not these people can afford to pay. Abuse of free services is reduced to a minimum. There does not appear to be any justification for maintaining a general medical service in the out-patient department of a hospital. All this general work can be done more cheaply, and without abuse of free services, by the ordinary family physician.

There is one function which an out-patient department might perform. It might provide a consulting service and special examinations for patients who are unable to pay for these. For example, if a practitioner had a poor patient who was unable to pay, and in the opinion of the doctor this patient required some special examination or investigation, he could be referred with a letter to the attending staff of a hospital. All that would be required would be to insist that no patient would be seen in the out-patient department of a hospital without a letter from a doctor, and, further, that once the investigation asked for by the doctor was completed, the patient should not be readmitted to the clinic without a further request from a doctor. This system could be well extended to the in-patient departments of the public services, an exception to be made in the case of emergencies. It would be comparatively simple for the attending staff of each department to have one morning a week on which they would see poor patients referred by practitioners for special examinations or special opinion. The patient could then be sent back to his doctor, with a letter containing the special report. There would be no need to carry out any treatments in the out-patient department. If admission to the wards were required for a further investigation or treatment, this could be arranged. It might be objected that this system of consultations for poor patients might be abused. If it were abused, it would be by members of the medical profession, and the profession itself could deal with the situation.

Under such a system, this service would form a definite part of the general medical services for the community. It would provide everything that is provided by any of the existing services, and at the same time prevent all the abuses to which the present system is exposed. There is nothing new about this system, as it is used in the voluntary and teaching hospitals of Great Britain, and functions with satisfaction to everybody. Above all, it returns the control of free medical services to the place where it belongs, that is, in the hands of the medical profession, who contribute the free services, and at the same time it ensures that the less fortunate members of the community will be provided with a consulting service.

The Annual Meeting

Any members of the Association who have papers they would like to present at the Annual Meeting to be held September 7th, 8th and 9th are requested to notify the Secretary, 102 Medical Arts Building, on or before June 15th, in order that the programme may be prepared.

The use of the out-patient departments and public wards of hospitals for the treatment of patients "*on relief*" is a separate problem. It is merely a specific example of the abuse of the free services of the clinics, in this case at the instigation of the State. Some central bureau for the registration of relief cases will probably be necessary when the governments finally see fit to arrange some proper medical service for these people "*on relief*."

Even if the problem of medical services for people "*on relief*" is settled, the general question of the organization of hospital out-patient departments will still remain to be settled. In view of the fact that one of the largest out-patient departments in Winnipeg is now closed, the present seems an opportune time for the medical profession to discuss the problem and formulate some definite policy to be adopted for hospital out-patient departments and the public wards. The regulation of free medical services is definitely a responsibility for the medical profession. The supplying of free medical services through these clinics has been left too long under the control of "*private peddlers of other people's charity*" with demoralizing effects on the patients, the hospitals and the medical practitioners. —C. W. MACC.

Winnipeg Medical Society

At the Annual Meeting of the Winnipeg Medical Society, held May 19th, the following officers were elected for the 1933-34 season:—

President.....	Dr. A. P. MacKinnon
Vice-President	Dr. W. E. Campbell
Secretary.....	Dr. O. C. Trainor
Treasurer.....	Dr. C. E. Corrigan
Trustee (three years)	Dr. S. Rodin

A Real Surprise

A patient rang the bell of a doctor. The doctor's wife opened the door. "Can I see the doctor?" asked the patient.

"Couldn't you come to-morrow night?" asked the wife.

"Is he that busy?" inquired the patient.

"No," said the wife, with a winning smile, "but you are his first patient and I'd like to surprise him to-morrow, as it's his birthday."

Richard Bright and His Contribution To the Study of Nephritis

Address of Retiring President — Dr. Fred. J. Hart

WINNIPEG MEDICAL SOCIETY, MAY 19th, 1933

VERY early in my medical career, I was called to see a farmer a few miles out in the country, of whom it was said by his neighbors that "Dropsy had set in." This was a dire pronouncement, and in the lay mind indicated that dissolution was only a matter of days. The urine boiled almost solid, and from him I learned that he had been in poor health for months, so decided that the present condition was probably a sub-acute exacerbation rather than an acute nephritis. I saw this man fairly frequently and well remember the atmosphere of that home, which was rather a colossal presumption on the part of this young Canadian Doctor, for I was then in the United States, at being able to do anything for this condition. However, in spite of the treatment, Martin Doran began to improve, and in a few weeks the oedema had disappeared. He began to sit up, and later was out directing his farm operations. The atmosphere of that home had changed, and "those who came to scoff remained to pray." I probably didn't go out of my way to convince these people that this man was not making a satisfactory recovery, and I would like to think that it was, because I wasn't quite sure. However, I did not feel very sanguine, for seeing the man at intervals I noticed he was becoming anæmic, a left ventricular hypertrophy developing, a marked second aortic accentuation, a lowered specific gravity of urine, lessened albumin in the urine, many granular casts and increased night urine. Blood pressures were not available at that time, nor laboratory tests. This man lived over a year, dying a uræmic death.

I was much impressed with this case, and my interest has not waned. In the intervening years, I have seen many of these cases come and go and always depart by the same road, except where, like the vision of Mirza, some dropped through hidden trap doors of intercurrent disease. This view has been challenged by modern thought and so I have avoided expressing myself, except when cornered, but now, as the nephrosis bogey as a separate entity has been pretty well exploded, I feel freer to express myself, particularly as this paper is not open for discussion.

Diseases of the kidney have been recognized for many centuries. In Leviticus 3:4, the anatomical relations and position of the kidneys are described. When the Roman soldier, by command of Pontius Pilate, thrust his spear in the side of our Crucified Lord to see if he were really dead, Nicodemus, the physician, who was present, knew that neither the kidney nor any other organ had been injured. In Psalm 7:9, we find this phrase, "The righteous God trieth the hearts and reins;" Psalm 26:2, "Try my reins and my heart;" Jeremiah 11:20, "Thou that triest the heart and the reins." Every Bible Concordance gives reins as synonymous with kidneys. So it is apparent that disease of the heart and kidneys was recognized at this early period, and we wonder if the physicians of that day recognized the association of disease of the kidneys and heart.

Our first authentic information on nephritis is obtained from the work of Aetius some time between 300-400 A.D., who described certain cases of

oedema and anasarea associated with hardened kidneys. Avicenna elaborated this clinical picture in 1000 A.D. by describing the urine as thin, watery and increased in quantity. It was in the latter half of the 18th century that Morgagni, who was regarded as the founder of pathological anatomy, described clinically and anatomically cases of granular contracted kidney associated with dropsy. He also observed, in other cases of dropsy, diseased livers with healthy kidneys, and so we have our first classification of dropsy, viz., those with or without diseased kidneys. Now, in 1770, Cortugno demonstrated for the first time the occurrence of serum albumin in the urine of dropsical patients, but erroneously held that it represented an effort on the part of the organism to get rid of the oedematous fluid. Cruikshank confirmed Cortugno's findings, observing also that certain cases of dropsy had no albumin in the urine. Wells, about this time, demonstrated the presence of blood and albumin in the urine of scarlet fever patients. Brande and Seudamore knew that albuminous urine contained less urea than normal urine.

To all these early observers, one great difficulty seems apparent. They could study diseases of the lung, heart, liver or spleen more or less independently, but not so the kidney, because of associated heart and vascular conditions, and it was always a problem as to which was primary and which secondary.

Bright then had the advantage of the findings of these early observers. We must now consider Bright's contribution to our knowledge of nephritis. It might be opportune to refer briefly to a biographical sketch of his life.

Richard Bright was born at Queen's Square, Bristol, on the 28th of September, 1789. He was the third of four sons in a family of seven. His father, Richard Bright, was a merchant and banker of "substance and standing," which was fortunate, as Richard Jr. must have required considerable financial aid in his various diversified activities. He first attended Dr. Estlins' School at Bristol, where his most intimate friend was Henry, afterwards Sir Henry, Holland. Later he took private tuition from Dr. Carpenter at Exeter, matriculating to Edinburgh University in 1808, and for the next year studied moral and natural philosophy, political economy and mathematics. The following year he studied anatomy under Hope, Munroe and Duncan. During the summer of 1810, he, with Henry Holland, accompanied Sir George Stewart MacKenzie to Iceland for a four-months' trip, but because of shipwreck it turned out to be a fourteen-months' trip. The object of this trip was to study the botany and zoology of Iceland, and Bright showed a wonderful aptitude for drawing and engraving, which helped him in later years in his excellent illustrations of pathological and anatomical specimens. On his return, he went to Guy's Hospital, studying under W. Babington (whose daughter he afterwards married), Astley Cooper, and others. In 1812 he returned to Edinburgh, and graduated in 1813, getting his M.D. with a thesis on "*De Erysipelate Contagiosa*."

His first real medical work was done on Erysipelas, in which he pointed out the similarity in contagiousness between Erysipelas and Puerperal Fever. About this time he wrote his father, making one of his earliest observations and speaking of medicine and surgery, "You must know that at this moment surgery is rising very fast at the expense of medicine, and we must do our best to hold our ground."

In 1814 he went to Holland, Belgium and Germany, doing post graduate work. In 1816 he read a paper before the Geological Society in London on "*Interesting Volcanic Formations in Hungary*." In 1818 he again visited the continent for study, though he dearly loved to travel. In 1820, at 31 years of age, the artist, botanist, zoologist, geologist and philosopher first started

practice, establishing himself at 14 Bloomsbury Square, and was made Assistant Physician at Guy's. In 1822 he gave lectures on Botany in "*Its Relation to Materia Medica*." In 1824 he was made full Physician at Guy's, and lectured on "*Theory and Practice*," sharing the course with Addison.

He was much impressed at this time by the clinical observations of Corvisart, and the pathological anatomy of Bichat, also the genius of Lænnec, who all showed that men were using their senses and reason in the study of disease. "It was a stimulating period in medicine, after long centuries of more or less blind worship of tradition, of authority and of doctrine, during which that which was most certain in medicine was the rather conjectural art of prognosis." Bright was fired with the spirit of the times. Lænnec died on the 13th of August, 1826, and Bright took up the torch, publishing shortly afterwards a volume entitled "*Reports of Medical Cases Selected with a View of Illustrating the Symptoms and Cure of Disease by a Reference to Morbid Anatomy*." After this, he took up the study of the kidney, following up the work of Cortugno. Year after year he spent as much as six hours daily between the bedside and the autopsy room, correlating symptoms and clinical findings with morbid anatomy. In Guy's Hospital Report he says: "To connect accurate and faithful observations after death with symptoms displayed during life, must be in some degree to forward the opportunities of our noble art." "Especially he desires to preserve and explain by 'faithful engravings' the recent appearance of these morbid changes of structure." "I have never yet examined the body of a patient dying with dropsy attended with coaguable urine, in whom some obvious derangement was not discovered in the kidneys." Bright continues, cautiously and judiciously, "Whether the morbid structure, by which my attention was first directed to this subject, is to be considered as having in its incipient state given rise to an alteration in the secreting period, or whether the organic change be the consequence of a long continued morbid action, may admit of doubt, the more probable solution appears to be that the altered action of the kidney is the result of various hurtful causes influencing it through the medium of the stomach and the skin, thus deranging the healthy balance of the circulation, or producing a decidedly inflammatory state of the kidney itself, that, when this continues long, the structure of the kidney becomes permanently changed, either in accordance with and in furtherance of that morbid action, or by a deposit which is the consequence of that morbid action, but has no share in the arrangement of the vessels on which the morbid action depends." He noted also, in the early cases, the presence of hæmaturia. Again he says, "In all the cases in which I have observed an albuminous urine, it has appeared to me that the kidney itself has acted a more important part and has been more deranged both functionally and organically than has generally been imagined. In the latter class of cases, I have always found the kidneys disorganized. In the former, when very recent, I have found the kidneys gorged with blood."

Bright now reports twenty-four cases, of which seventeen came to autopsy, and all showed renal disease.

In case VIII, an advanced contracted kidney with left ventricular hypertrophy, he says, "The enlarged state of the heart would seem to bespeak some obstruction to the circulation through this system beyond what we discovered, nor will I venture to say what share this might have had in giving rise to the dropsy."

Bright now distinguishes three stages of a disease, which he inclines to believe to be progressive: (1) The changes consist largely in the cloudiness and mottling of the renal substance. (2) Granulation of the surface has

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begun. (3) The kidney is sclerotic and contracted, with an irregular nodular surface.

Clinically he notes the complications of pleurisy, pericarditis and peritonitis, and comments on their insidious onset. He speaks of the frequency of cerebral manifestations (forty-two and eight-tenths per cent. died with cerebral symptoms), "apoplexy" (coma), and epilepsy. In four of the cases, cardiac hypertrophy was noted.

Christison, in 1829, reported several cases of albuminuria with renal disease, and bore testimony to the accuracy of Bright's descriptions and the soundness of his conclusions. He, Christison, also observed the progressive diminution of urea and salts in the urine, and the increase of urea in the blood. Elliottson and Graves differed with Bright and argued against Bright's contention that albuminuria is usually an indication of renal disturbance. Gregory agreed with Christison, and brought forward observations rather than assertions and arguments. Gregory reports thirty fatal cases of albuminuria, with twenty-four autopsies. In every one of these, the kidneys exhibited "in a more or less marked degree the peculiar appearances described by Bright." Bright remarks again that the urine of some nephritics does not always show albumin, and advises repeated examinations.

By this time, Bright's work on the kidney, with the exception of two or three doubters at home, was generally accepted. Two years later, in his *Gustonian Lecture*, he describes the method of examining the urine, the heat and nitric acid test, and the confusion that may arise from phosphates and urates. Variations in the quantity of albumin bear no constant relation to the gravity of the anatomical changes. He states that, when the disease has lasted for some time, definite changes take place in the kidneys. At first little is to be made out except congestion. He describes the progressive changes in the kidney, up to the last stage of the picture, the small granular contracted kidney where the texture is semi-cartilaginous and the tubular portion drawn towards the surface of the organ. Bright now gives a summary of the history of the disease, and one wonders even with our present knowledge if we have learned much since his observations were made.

Intemperance seems to be its most usual cause, and exposure to cold its precipitating factor. He so often mentions cold as an etiological factor that we wonder if he did not recognize the accompanying infection. I quote from his summary, in which he gives the clinical picture of nephritis in its various stages: "A child or adult is afflicted with scarletina or some other acute disease, or has indulged in the intemperate use of ardent spirits for a series of months or years. He is exposed to some casual cause or habitual source of suppressed perspiration. He finds the secretion of his urine greatly increased, or he discovers that it is tinged with blood, or, without having made any such observation, he awakens in the morning with his face swollen or his ankles puffy or his hands oedematous. If he happens, in this condition, to fall under the care of a practitioner who suspects the nature of the disease, it is found that already his urine contains a notable quantity of albumin, his pulse is full and hard, his skin dry. He has often headaches, and sometimes a sense of weight or pain across the loins. Under treatment, more or less active, and sometimes without any treatment, the more obvious and distressing of these symptoms disappear; the swelling, whether casual or constant, is no longer observed; the urine ceases to evince any admixture of red particles, and, according to the degree of importance which has been attached to these symptoms, they are gradually lost sight of, or are absolutely forgotten. Nevertheless, from time to time the countenance becomes bloated, the skin is dry, headaches occur with unusual frequency, or the calls to micturition

disturb the night's repose. After a time, the healthy color of the countenance fades, a sense of weakness or pain in the loins increases, headaches often accompanied by vomiting add greatly to the general want of comfort, and a sense of lassitude, of weariness and of depression gradually steals over the bodily and mental frame.

"Again the assistance of medicine is sought. If the nature of the disease is suspected, the urine is carefully tested and found in almost every trial to contain albumin, while the quantity of urea is gradually diminishing. If, in the attempt to give relief to the oppression of the system, blood is drawn, it is often buffed, or the serum is milky and opaque, and nice analysis will frequently detect a great deficiency of albumin, and sometimes manifest indications of the presence of urea (in one case the blood serum contained one and one-half grains per cent. of urea). If the disease is not suspected, the liver, the stomach, or the brain divide the care of the practitioner, sometimes drawing him away entirely from the more important seat of disease. The swelling increases and decreases, the mind grows cheerful or is sad, the secretions of the kidney or the skin are augmented or diminished, sometimes in alternate ratio, sometimes without apparent relation.

"Again the patient is restored to tolerable health. Again he enters on his active duties, or he is perhaps less fortunate. The swelling increases, the urine becomes scanty, the powers of life seem to yield, the lungs become oedematous, and in a state of asphyxia or coma he sinks into the grave, or a sudden effusion of serum into the glottis closes the passages of air and brings on a more sudden dissolution. Should he, however, have assumed the avocations of life, he is usually subject to constant recurrence of his symptoms, or again, almost dismissing the recollection of his ailment, he is suddenly seized with an acute attack of pericarditis, or, with a still more acute attack of peritonitis, which, without any renewed warning, deprives him in eight and forty hours of his life. Should he escape this danger, likewise other perils await him. His headaches have been observed to become more frequent, his stomach more deranged, his vision indistinct, his hearing depraved, he is suddenly seized with a convulsive fit, and becomes blind. He struggles through the attack, but again and again it returns, and, before a day or a week has elapsed, worn out by convulsions or overwhelmed by coma, the painful history of his disease is closed."

In treating these conditions, Bright recommends rest in bed, careful attention to the skin, bleeding in the acute stages, and mild purgatives and diaphoretics. He is skeptical as to mercurial preparations, and diuretics, except digitalis, are positively dangerous. The diet is mainly milk and light animal food.

In a "*Tabulated View of the Morbid Appearances in One Hundred Cases Connected with Albuminous Urine*," he remarks on changes in the blood as a result of the disease, the loss of its color, of its albumin, the presence of urea-like substances in the serum, which he believes to be sufficient to account for the derangement of the system. I do not, therefore, by any means assert that all the lesions which the foregoing table details flow as a consequence from the kidney alone, but that they are such derangements as generally co-exist with this peculiar disease of that organ.

In referring to Bright's pathological observations, we notice that, up to the present, he refers only to gross appearances, but in 1842 microscopical studies were made with Toynbee on sections of an injected contracted kidney, which showed that the most important changes in the disease occur in the glomeruli.

This ends Bright's contribution to the study of nephritis, but for some years he continued arduous work on other medical subjects, to one of which I would like to refer.

We have heard much of late years of Coronary Thrombosis, so recent in fact that Osler and McKenzie recognized the condition as the possible cause of Angina Pectoris. Herrick, Levine and Trauter, in 1912, demonstrated the possibility of recognizing the condition clinically. Still, a hundred years ago, Bright reports in case thirty-nine of his One Hundred Tabulated Cases, "An instance apparently of pericarditis, in which was found an area of cardiac sclerosis surmounted by intraventricular thrombi." In connection with this, he describes a like example of "destruction of the inner lining of the heart near the apex, with intraventricular thrombi and sudden death."

This condition was evidently the cause of Bright's death, for he was seized with anginal pain and died four days later on the 16th of December, 1858.

During his life, he was bestowed with all the Academic Honors he so rightly deserved, and these were climaxed by the D.C.L. of Oxford in 1853.

He was buried in Kensall Green. In St. James Church, Piccadilly, a tablet is dedicated to his memory, with the following inscription:—


"HE CONTRIBUTED TO MEDICAL SCIENCE MANY DISCOVERIES
AND WORKS OF GREAT VALUE,
AND DIED WHILE IN THE FULL PRACTICE OF HIS PROFESSION
AFTER A LIFE OF WARM AFFECTION,
UNSULLIED PURITY AND GREAT USEFULNESS."

After considering this great man's contribution to our knowledge of nephritis, one naturally asks, "What have we contributed since his time?" Probably not so much as we had thought. How much are we able to add to his description of the Etiology, Symptomatology, Course, Prognosis, Treatment, and even Pathology, so beautifully portrayed by Bright's drawings and engravings, and clarified by Weigert in Bright's time, so that Oertel admits that our Pathologists of recent years have added little to Weigert's classical descriptions.

The classification of nephritis has been the subject of controversial comment for many years. In Bright's time, acute, sub-acute and chronic Bright's Disease was accepted by the Germans and many of the English writers, while today we hear little of this old-fashioned simple classification. Christian, however, who has given us probably our best working classification, remarks that if you classify nephritis as "acute, sub-acute and chronic Bright's Disease, you will not be very far wrong."


Perhaps our greatest advance has been along bio-chemical lines, for by the help of the Bio-chemist we have been able more accurately to determine the function of the kidney. Probably the most useful of these chemical tests is the Urea Clearance Test, for by this we believe we may be able to determine a functional derangement of the kidney before it becomes organic.

Twenty years ago, Tuberculosis headed the mortality list. Today it comes third. Why? First, because its etiology is well known and prophylaxis thoroughly carried out, and, secondly, many more cases are picked up in their incipient stage, so earlier treatment is possible. Then, I think it is fair to assume that, if we could get these kidney cases early, when there is only early functional derangement present, even with the treatment advocated by Bright, viz., rest in bed, mild purgation, diaphoretics and light diet, many



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In this study, one is profoundly impressed by the accomplishment of Bright and his confrères in correlating clinical signs with morbid anatomical findings. Are we making the best of our opportunities in this particular line? I believe that every Autopsy should be a Pathological Conference, where the clinician should be present to give the history, physical signs and symptoms, so that we may avail ourselves of the great opportunity which meant so much to posterity through the careful observations of Richard Bright.

Minutes of Executive Meeting

MINUTES of a Meeting of the Executive of the Manitoba Medical Association, held in the club-rooms of the Medical Arts Building on Thursday, May 18th, 1933, at 6.30 p.m.

Present.

Dr. A. F. Menzies, Dr. A. J. Douglas, Dr. Ross Mitchell, Dr. F. G. McGuinness, Dr. R. R. Swan, Dr. J. S. McInnes, Dr. W. J. Elliott, Dr. D. C. Aikenhead, Dr. R. F. Yule, Dr. C. W. Wiebe, Dr. E. D. Hudson, Dr. J. D. Adamson, Dr. S. J. S. Peiree, Dr. G. D. Shortreed, Dr. C. W. MacCharles, Dr. A. G. Meindl.

Following dinner, minutes of the last Executive Meeting, held March 29th, 1933, were read by the Secretary and approved.

Extra Mural Funds.

The Secretary advised of having interviewed Mr. C. C. Ferguson, of the Great West Life Assurance Company, but that no funds were available from that source. Mr. Ferguson had suggested that we get in touch with the Canadian Life Insurance Officers' Association of London, Ont. Letter from Dr. Routley, under date of April 11th, replying to communication sent him regarding this subject, was read, stating that the Canadian Medical Association was already receiving \$6,000.00 a year from the Canadian Life Insurance Officers' Association to finance the Department of Publicity and Health Education, and that he did not wish to suggest to that body that they contribute more funds.

Workmen's Compensation Board and Anæsthetic Fees.

The Secretary reported for Dr. F. D. McKenty on this matter, advising that at a meeting of the committee it was decided that this was not a matter to be taken up with the Workmen's Compensation Board, but rather through the hospitals, so that they might come to some definite agreement amongst themselves as to what fee should be charged to the Compensation Board. Dr. McKenty suggested that this matter might well be turned over to the Special Relief Committee of the Winnipeg Medical Society.

It was moved by Dr. Ross Mitchell, seconded by Dr. J. D. Adamson: That this matter be turned over to the Winnipeg Medical Society. —Carried.

Payment of Fees for Insurance Certificates.

Dr. Mitchell reported that his committee had held a meeting with the Insurance Underwriters' Association, and read letter from Mr. R. J. Parker, under date of May 8th, advising that the Insurance Companies could not assume the responsibility for the payment of these certificates, but suggesting that the certificates might be endorsed across the face with an authority to pay, and could be signed by the insured person at the time the certificate was completed.

Following discussion, it was moved by Dr. R. R. Swan, seconded by Dr. F. G. McGuinness: That the report of this committee be accepted, and the matter left with them for further investigation. —Carried.

Member to Board of Cancer Relief and Research Institute.

Letter from the Cancer Relief and Research Institute, under date of May 2nd, was read, re. additional member to Board.

It was moved by Dr. C. A. MacKenzie, seconded by Dr. J. S. McInnes: That Dr. M. R. MacCharles be re-appointed for a further term of three years. —Carried.

Appointment of Alternatives to C.M.A. Council Meeting.

Letter from Dr. Routley, under date of April 19th, was read, advising that certain representatives appointed to the C.M.A. Council were unable to attend the Council Meeting to be held in Saint John, June 19th and 20th.

It was moved by Dr. C. A. MacKenzie, seconded by Dr. F. G. McGuinness: That the Secretary ascertain who are going to Saint John, and reply to Dr. Routley's letter accordingly. —Carried.

Names suggested were Drs. Wm. Boyd, W. Harvey Smith, G. S. Fahrni and J. D. Adamson.

Annual Meeting.

DATE. Letter from the Canadian Hospital Council, under date of May 3rd, was read, advising that their meeting would be held in Winnipeg, September 8th and 9th, and giving a list of topics to be discussed. It was suggested that Dr. Haywood, of Vancouver, would be in Winnipeg at that time, and that he would be an excellent speaker for our programme.

Following discussion regarding dates, it was moved by Dr. J. D. Adamson, seconded by Dr. D. C. Aikenhead: That September 7, 8 and 9 be set for the Annual Meeting of this Association, to be held at Fort Garry Hotel, and that the matter of adjusting the programme be left to that committee. —Carried.

SPEAKERS. Letter from Dr. Routley, under date of April 11th, was read, advising that the prospects of a team for the Annual Meetings of the Western Provinces were not very bright, and that he felt that a break of a year would not do any harm, but that if the funds could be raised he would advise us. It was suggested that we might try to work in more speakers, among the younger men of the province at this meeting. Following further discussion, it was decided to leave this in the hands of the Programme Committee.

APPOINTMENT OF COMMITTEES. The following Conveners of Committees were appointed for the Annual Meeting:—

Hotel, Reception and Auto.....	Dr. A. G. Meindl
Finance.....	Dr. F. G. McGuinness
Press and Publicity.....	Dr. C. W. MacCharles
Scientific Exhibits.....	Dr. Digby Wheeler
Commercial Exhibits.....	Dr. E. J. Boardman
Entertainment, Dinners and Luncheons.....	Dr. R. R. Swan
Ladies' Committee.....	{ Mrs. A. F. Menzies Mrs. A. J. Douglas
Programme Committee.....	{ Dr. Ross Mitchell Dr. F. W. Jackson Dr. J. D. Adamson
Resolutions Committee.....	Dr. G. S. Fahrni
Registration and Tickets.....	Dr. F. W. Jackson

District Medical Society Meetings.

Letter from Dr. R. F. Yule, under date of April 26th, was read, stating that their meeting would be held May 31st. The matter of funds for speakers to attend meetings of the District Medical Societies was discussed, and different suggestions made. The Secretary advised that, if the Association could obtain speakers, he would gladly take them out to any meetings he was attending, and thus save transportation costs.

It was moved by Dr. C. W. Wiebe, seconded by Dr. J. D. Adamson: That an Extra Mural Committee be re-appointed for the ensuing year. —Carried.

It was moved by Dr. C. A. MacKenzie, seconded by Dr. J. D. Adamson: That Dr. J. S. McInnes be Convener of the Extra Mural Committee, with power to add. —Carried.

Dr. McGuinness suggested that the Association might pay the expense of one car, but that no honoraria be paid to speakers.

Dr. Adamson suggested that a list of speakers might be prepared, with subjects, and that this list could be sent to the District Societies so that they might choose their own speakers.

Delegates to Ontario and British Columbia Meetings.

Dr. Mitchell advised that as yet he had not obtained delegates for these meetings, but that he would take the matter up with Dr. Fahrni and see what could be done.

Interim Report of Financial Standing.

The Secretary read a brief report showing accounts owing by the Association to date, and cash on hand, together with number of dues paid and outstanding. It was decided that drafts be issued on all those in arrears.

It was moved by Dr. F. G. McGuinness, seconded by Dr. C. A. MacKenzie: That the salary of the Associate Secretary be reduced to ninety dollars (\$90.00) a month. —Carried.

Correspondence.

Communication from the Department of Pensions and National Health, Ottawa, under date of May 4th, was read, advising that the International Narcotic Convention of 1931 had been ratified by a sufficient number of countries and would go into International effect on July 9th next. This communication asked if our Association would be good enough to obtain an expression of opinion at the next Annual Meeting as to whether the use of heroin in Canada should be abolished.

Following discussion, it was moved by Dr. R. R. Swan, seconded by Dr. C. W. Wiebe: That a committee be appointed to study this question and bring in a resolution to the Annual Meeting, also that we ask the Pharmaceutical Association to appoint a representative. —Carried.

The following committee was appointed:—Dr. D. C. Aikenhead, Dr. Ormerod, Dr. A. T. Mathers and Dr. H. M. Speechly.

Communication from the Secretary of the Farmers' Union of St. Elizabeth, under date of April 10th, was read. This letter had been addressed to the Hon. R. A. Hoey, and referred to us. The letter made definite complaint regarding the medical services in that district, and asked for information as to mileage charges of doctors in rural districts. Following discussion, the Secretary was requested to get in touch with the doctor in that district and obtain his side of the matter before replying, and that the Secretary of the Farmers' Union be notified that the matter is being investigated.

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News Items

— of —

Department of Health and Public Welfare

Grasshopper Control

GRASSHOPPERS, locusts — which you will — have been a menace to man's prosperity since the first sowing of grain. All through the nineteenth century the fair fields of Manitoba were laid waste by the enemy, first, in 1818, six years after the founding of the Red River Settlement, and then at intervals of ten or eleven years. But science has forged a weapon, found a specific, with which to combat the scourge, and foremost among those in the fight we may reckon two men of Manitoba — Norman Criddle and Professor A. V. Mitchener.

Just over thirty years ago Criddle, of whose genial fellowship and faithful service death has so recently robbed us, introduced his mixture of white arsenic with horse droppings and salt. In 1920, under the guidance of Professor Mitchener, large tracts of the country were saved from the depredations of the foe by the use of white arsenic or paris green mixed with bran. It is estimated that last year's campaign saved the province an amount of eleven million bushels of wheat, eight millions of oats and five millions of barley, besides affording protection to crops of wild hay, rye, flax, roots and market produce. The ingredients cost over \$115,000.00.

It is obvious that the egg deposits available for hatching this year were also materially reduced, yet in October, after a careful survey, made under his direction by the Dominion Entomological Branch, Mr. Criddle reported:

"We have found abundance of eggs spread over a wide section of the province and, in spite of the rather high percentage of parasitism, there is no doubt that we are threatened with an outbreak of grasshoppers next year which will be fully as bad as the one we have had to deal with this year! In some areas there were tremendously heavy deposits of eggs — in one section south of Winnipeg the count exceeded 100,000 eggs to the square foot."

The hope expressed in some quarters that the severe winter may have killed grasshopper eggs appears to be unfounded. Professor Mitchener and Mr. Criddle agreed that frost, however severe, does not destroy them. Mr. H. E. Wood, the director of the grasshopper control campaign, under the Department of Agriculture, states: "It is true that parasites last fall destroyed a very considerable number of eggs, but the probability that the countless millions of eggs, that are known to be in the ground, will hatch becomes almost a certainty. Should we have a hatching period followed by cold wet weather, we may, however, expect that the damage from hoppers will be greatly reduced. Last year's campaign embraced over 70 municipalities, but the area likely to be affected this year is even more widespread — covering perhaps 90 municipalities. The control campaign a year ago centred in the Red River Valley with scattered outbreaks in the south-western part of the province and also in the Dauphin area. This season considerably more trouble is looked for in western Manitoba. The survey map, which has been distributed through the affected area, shows the most seriously threatened district to lie to the south of Winnipeg, extending from Carman on the west to Steinbach on the east, Sanford on the north and Emerson on the south.

Almost all of the rest of the Red River Valley may look for considerable trouble. Most of the country west from the Pembina Mountains to the Saskatchewan boundary will be subject to severe localised outbreaks."

By special methods of furrowing in the early spring many of the eggs may be deeply buried, but the main line of attack is against the wingless hopper. The habits of grasshoppers vary, but of those constituting a menace, Mr. Criddle has written: "All hatch from eggs deposited in the ground during the previous year. Their appearance in spring depends upon the weather, but under average conditions some of them can be expected to emerge early in May, while others will not do so until well into June. Warm weather hastens their emergence and development; cold weather retards them. After emergence two activities dominate the insect's life, namely, the art of feeding and that of sunning itself. The hoppers huddle together in a sunny spot until the temperature rises to about 65° F. in the shade, when they begin to scatter in search of food. The height of the feeding activity, however, is not reached until the temperature attains approximately 75° F. They feed most freely between this and 85° F. The secret of success in poisoning grasshoppers is to spread the bait when the appetite of the insect is keenest—when the temperature reaches approximately 75°—then we can be sure of the bait being fresh and moist, in which condition it is most appreciated by the grasshoppers. The main necessity in spreading bait is to scatter it finely and place it where it can be immediately eaten by the grasshoppers. Grasshoppers are most easily reached before they attain the winged stage (after some five moults) but they will eat poisoned bait at any time."

The field campaign will probably commence this year in the fourth week of May: the experience of last year will enable this year's work to be even more adequately organised.

Liquid sodium arsenite, a solution containing 8-lbs. of 98% arsenious oxide and 2-lbs. of caustic soda to the gallon, is prepared at Chipman's chemical factory in Winnipeg. The solution is distributed in drums to mixing stations placed at strategic points in the affected area and under municipal control. Here it is mixed with bran or malt sprouts, sawdust and water; the bran or malt forms the tasty bit, the sawdust helps to insure an even spread and reduces the tendency to waste the bran by scattering it too thickly. The final bait contains one quart of *liquid sodium arsenite* to 100-lbs. of bran and sawdust with sufficient water, usually between 10 and 12 gallons, to make it so wet that when a handful is squeezed the water oozes out between the fingers. Its consistency is such that when broadcast it will scatter thinly over the ground. The bait is placed in bran sacks for collection by the farmers.

In the former use of white arsenic or Paris green at the mixing station, the particles of poison floating in the air constituted a distinct risk and respirators were recommended to be worn. This has been obviated by the substitution of the soluble arsenite, but there are still two dangers to be encountered: the caustic action of the solution and of the mixed bait, and the swallowing of arsenic from unwashed hands or in contaminated food.

Last year several men suffered from severe burns through careless handling, and more than one through sitting or lying on the sacks. In some instances men who used ungreaed leather gloves found the caustic worked through to the hands.

Careful protection of the hands and other parts of the body is therefore the primary necessity: the use of rubber gloves or leather gloves well lubricated with vaseline or axle grease is essential for those at the mixing stations,

and strongly recommended for those scattering the bait. It is well to grease the hands, particularly under the finger nails. Extra overalls or aprons should be worn, shirt collars turned up and sleeves rolled down. Cleanliness is of the utmost importance. Unwashed hands should never touch the mouth or food; the body should be washed all over after the day's work. At the mixing station there should be a plentiful supply of water and also vinegar for immediate application to slight burns.

In one area several men at the mixing stations were afflicted with symptoms of general arsenical poisoning. They first complained of nausea and repeated vomiting; there were various skin eruptions, and, finally, paraesthesiae, amblyopia and photophobia. The average loss of time from work in these cases was 107 days. It seems probable that these men carried the poison to their mouths by food, or perhaps by cigarettes, handled with unwashed hands. Arsenical poisoning among those engaged in the destruction of grasshoppers has also been reported from Germany and from Italy. The skin eruptions and the nerve symptoms are common in such outbreaks and were well recorded in the Manchester epidemic of poisoning in 1900, traced to arsenic in the glucose used in the manufacture of beer. The eye symptoms are apparently uncommon.

There is a further possibility that the poison may seep through the sacks to food placed near to them, or into the trucks used for their conveyance. Therefore, it has been urged that no food be carried in the same truck as bail, and that the trucks be well scrubbed before being put to other use.

Last year there was considerable loss of livestock through careless dumping of the bait. Formerly the salt content proved an attraction, and though this has now been omitted, farmers are still warned against leaving the sacks in the yard or the bait in heaps on the ground. Consideration for the children also demands care in the storage of the bait and general cleanliness and precaution.

A set of rules has been issued for the guidance of the men at the mixing stations and of those using the bait, but the most effective protection will be afforded by the supervision of the plant by the health officer. Last year in the municipality that used the largest amount of bait—6,800 gallons of the *liquid sodium arsenite*—there were only two men who were laid off and these for slight burns. This good fortune was mainly due to the efforts of the health officer, who personally made it his business to find out all he could about the best means of safeguarding men and livestock and took every possible occasion to impress upon the farmers and the mixers the importance of care. Therefore, the co-operation of all health officers and medical practitioners in the districts where poison bait is being used is earnestly solicited.

—N. R. R.

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Diphtheria and Antitoxin

BY a cruel irony of fate Loeffler, at the very moment of success, was robbed of the honour of demonstrating the toxin he had assumed to be the cause of the damage wrought in the body through the invasion of diphtheria bacillus. He had constantly found the bacilli in sections of the site of inoculation, never in any of the internal organs. Therefore, he concluded, "it must be that a chemical agent produced by the germs enters the blood stream and leads to hæmorrhage in the glands and to effusion into the pleural cavities." After various failures to obtain this agent in bacteria-free condition, he finally succeeded by culture of the germs on pieces of meat, extraction

with glycerin and treatment of the extract with five times its volume of absolute alcohol. The solution of the precipitate in water produced on inoculation into guinea-pigs hæmorrhages and effusions similar to those found after inoculations with live cultures of the diphtheria bacilli. But just as he achieved this success he read in the Annals of the Pasteur Institute the description by Roux and Yersin of their production of the sterile toxin by the simpler method that has since required little modification: the filtration through porcelain of a broth culture of the germs.

This was the most striking of a series of discoveries of toxins secreted by disease-producing bacilli. Behring hailed it as "the opening of a new era in the doctrine of the infectious diseases; the conception of infectious disease processes as a reaction to the attack of poisons." It led him to seek in the blood the changes affected by disease. He found that the blood of an animal, that has successfully passed through a disease, has acquired a property by which it can render a second animal immune against inoculation with the germ of that disease and, if given in time, can save an animal already inoculated. He was led to the conclusion that a new substance had been formed in the blood which destroyed the toxin, and that it was upon the development of this antitoxin that depended the sudden turn and favourable issue in a disease, such as pneumonia. Here was the *vis medicatrix naturæ* for which men had been seeking through the ages. For many years there was a fruitful, if heated, contest between the adherents of Metchnikoff's cellular theory and those who followed Behring.

Behring's earlier laboratory experiments were made with the serum of guinea-pigs which had been inoculated with diphtheria bacilli and then recovered with the aid of iodine trichloride. Later he reverted to Pasteur's methods of vaccination, inoculating first with cultures of diphtheria germs weakened with iodine trichloride and then with increasingly virulent cultures; the serum of vaccinated animals was the source of his antitoxin. Much of the early experimental work on toxin and antitoxin was done in tetanus: this was mainly on account of the relative cheapness of the animal, in tetanus the mouse, upon which the investigations could be carried out. It was in this that he received the collaboration of the Jap, Kitasato.

For the production of antitoxin on a large scale, Behring used sheep. He first applied the new product to the treatment of diphtheria in man at a Berlin hospital in 1891, but for some years he refrained from placing it at the general disposal of the profession, lest by any mishap it fell into discredit. Rather, he confined it to his own use and to that of his colleagues and friends, upon whose care and co-operation he could rely. In this way some of the first consignment to reach this continent was used at Winnipeg. Of this, Dr. Andrew, of Minnedosa, has favoured the writer with the following account:

"In 1890, the late Alexander Hugh Ferguson visited Scotland, England and Germany; in Germany he met Behring, who was then working on diphtheria, and by 1891 got on its track. In 1894 a shipment was sent to New York and a dozen "1000" bottles was included in this shipment for Dr. Ferguson. Dr. Ferguson, having given up general practice and devoting all his time to surgery, sent the twelve up to the old isolation block—I was in charge at that time, and if I remember rightly, Dr. Nelson was visiting doctor. (In those days the staff had one month each: surgery, medicine or babies, all fell to the lot of the member of the staff who had the free patients for a month). The case was a mild one and it was just as well as we only gave him 1000 units and he got well. I met a man not far from here and

we were talking on diphtheria and toxoid. I told him about the first lot of antitoxin we got and when it was given and he said he was the patient!"

Now once more the centre of the scene shifted to Paris, for, while Behring deserves all the credit of the discovery of the healing property of immune serum, it is to Roux and his clinical colleague, Martin, that we owe the popularization of the method of treatment. Since 1891 they had been studying the production of antitoxin in horses and thus laying the foundation for its successful manufacture on a commercial scale. It was the address of Roux at the Budapest International Congress in September, 1894, that heralded the introduction of antitoxin into general use.

From all quarters there is evidence that the use of antitoxin was followed by decided reduction in the fatality rate from diphtheria. Formerly hospital returns of 50-75% of deaths had not been uncommon: such figures were no more heard, nor does it seem likely from the numbers of deaths still occurring in isolated districts before medical aid can be secured that the fall has been due to any marked change in the seriousness of the disease. But we would err in attributing all the difference to antitoxin. Already, in 1894, a hospital at Greifswald could claim a mortality of 14.5% for the year without the use of serum. In 1898 Fibiger divided all cases of diphtheria into two groups: all cases admitted on one day were given antitoxin, all those admitted on the following day were treated without antitoxin, and so on through the year. Of 239 cases treated with antitoxin, 8 died, a mortality of 3.5%; of 245 cases treated without antitoxin, 30 died, a mortality of 12.25%. Such figures not only show the marked superiority of antitoxin, but also without this, an advance over previous returns. They would suggest that improvement in hospital accommodation, in nursing and perhaps in treatment, had played some part. Chlorine was still held as almost a specific. Bretonneau had formerly used fuming hydrochloric acid; Behring had found iodine trichloride efficacious in the treatment of guinea-pigs, and had applied it in children, but with disaster; Loeffler had high praise for a mixture of alcohol, toluol and the perchloride of iron; in England, chlorine water enjoyed a long popularity. Astringents were now replaced by antiseptics: local applications of calomel by that of salts of the mercuric series; anilin dye stuffs were introduced; while carbolic acid was preferred in England; even today there are not a few advocates of the use of Mandl's pigment as an adjunct to the serum treatment.

For a long time antitoxin was given in doses that would now be considered inadequate, and there is little doubt that the treatment with higher doses in more concentrated serum, as adopted since the war, has been followed by improved results, and by a coincident disuse of local applications.

The teaching of Roux, who saw in the removal of the membrane the creation of new openings for the absorption of toxin, is more closely followed than ever.

Behring, as we have seen, held that the antitoxin destroyed the toxin; Metchnikoff, and members of the cellular school, regarded the protective substance as a "stimulin" which activated the phagocytic or pinocytic function of the cells with consequent imbibing of the toxin. It is to Ehrlich that we owe the hypothesis of a chemical reaction between antitoxin and toxin as between acid and alkali.

What is the action on the membrane? Behring had shown that the bacillus thrives in the presence of antitoxin—Gabritschewsky, then a pupil of Metchnikoff at Paris, studied the course of events in the eyes of an immunized and non-immunized rabbit after inoculation with diphtheria. For

three hours the leucocytes in either case retained their rounded form and engulfed the germs. After this period the white cells in the eye of the non-immune animal began to perish and the bacillus continued to multiply, a membrane formed over the iris and finally the eye was destroyed; in the immune animal the white cells retained the supremacy till all germs had disappeared, no membrane was formed and there was no evidence of destruction. In the one case, the toxin secreted by the bacilli had exercised its necrosing action on the leucocytes; in the other the toxin had been neutralized by the antitoxin and the phagocytosis had proceeded undisturbed.

Were antitoxin readily available on all occasions when a child develops a diphtheria throat or larynx, all would be well. It seems that the fatality among those who receive antitoxin on the first day is less than 1%.

To suggest that the efficiency of antitoxin obviates the necessity for prophylaxis is a fallacy that can be scarce understood. One need only point to the numbers of deaths from diphtheria to show the absurdity of such a position. The difference between the case fatality in Winnipeg and that in Rural Manitoba indicates the advantage of ready availability of medical attendance with antitoxin. During 1932 there were in Winnipeg 218 reported cases of diphtheria with only seven deaths; outside Winnipeg 183 cases were reported and there were nineteen deaths.

Of recent years there have been outbreaks of diphtheria, especially in Germany, in which antitoxin has seemed to be of little benefit. By some the failure has been attributed to an associated infection with streptococci and a mixed antitoxin has been used with some apparent success. Others hold that these intractable cases are due to a variation of the diphtheria bacillus, known as the *gravis*. It is, however, comforting to realize that whether the bacillus be of the *gravis* or of the *mitis*, or of an intermediate type, the antigen remains the same, so that toxoid protects against all.

When Behring found that the injection of immune serum would not only cure an animal already infected but would also prevent an infection, he concluded that he had found a true prophylactic.

It was not long before it was realized that the immunity imparted by the antitoxin was of short duration, while that following repeated doses of toxin was lasting. For the first procedure Ehrlich coined the name passive immunization, and for the second, active immunization.

Attempts to produce lasting immunity in humans by the injection of toxin under the skin or by the introduction of it into the nostril were found to be attended with danger. The active immunization of children was to wait for nearly twenty years; it was Behring, now His Excellency, Geheim Rat Dr. von Behring, who in 1913 showed the safety of toxin-antitoxin, but it was the United States that earned the credit of suggesting this means and also of carrying the procedure into execution on an extensive scale.

The history of the use of toxin-antitoxin, first in the laboratory, later in the immunization of horses and finally in man, is given in detail for the period from its first use in 1895 till the year 1922, by Dr. W. H. Park in the *Journal of the American Medical Association*, Nov. 24, 1922, 79, 1584.

The history of toxoid also dates back to the nineties, when Ehrlich found that on storage toxin gradually lost its virulence, but not its property of combining with antitoxin. To this changed toxin he gave the name of toxoid. This change was found to take place more rapidly and more surely on treatment with various chemical agents, notably iodine and formaldehyde. In 1924, Ramon found the formalised toxin, or anatoxin as he called it, —

toxoid in the older Ehrlich nonenelature, — to be actively antigenic, and so introduced it in place of the less stable and less sure toxin-antitoxin. Reports of a more powerful antigen, alum toxoid, by the use of which the latent period following the course is to be shortened, promise still greater satisfaction.

Surely Behring's words have come true: "*Die Diphtherie ist eine vermeidbare Krankheit.*"
—N. R. R.

* * * *

Distribution of Insulin

WE very much regret to inform you that on and after July 1st, 1933, the Department of Health and Public Welfare will have to put into operation a new plan in reference to the distribution of Insulin for indigent patients.

Owing to the large number of people requiring Insulin free, the cost to the Department over the last couple of years has greatly increased, and in view of the fact that our Health appropriation has been considerably curtailed, it has been decided, as a matter of economy, to have the Insulin distributed by the officials of Municipalities, where the same is required for indigent persons.

Under this plan the Municipalities will obtain the Insulin from us, but will bear half the cost of it. Therefore, in future, any doctor who has a patient requiring free insulin should submit request for it to the Clerk of the Municipality in which the patient is a resident. When making a request be sure to state the amount of insulin required daily and what strength is being used.

We trust this policy will only be a temporary one.

Address to the Graduates in Medicine University of Manitoba

MAY 16, 1933

Mr. Dean, Ladies and Gentlemen of the Graduating Class:—

It is an honour and privilege to address you on the eve of your graduation, when you are about to launch your barques on the troubled sea of medical practice. You, young mariners, will encounter storm and stress; indifference and neglect may make you feel that icebergs are in the offing; there will be hidden shoals and reefs; it may be that the gulfs will wash you down, but the earnest wish of all the faculty is that each of you will be captain of your soul and that you will ultimately arrive at the safe haven of an assured practice and, what is more, the respect and confidence of your patients.

On such occasions as these the custom has been that some ancient mariner should seize you with his glittering eye and unfold his tale. Most of us in this room have been thrilled with Noel Coward's *Cavalcade*, that recital of episodes in the life of the Marryot family. Today I propose to apply the same method in relating incidents in the medical history of this western country.

First let us turn our thoughts back a century and imagine we are within Fort Garry, the centre of authority for the Red River settlement which stretches for fifty miles up and down the banks of the two rivers. A young doctor, a native of the settlement, but who has recently returned from Edinburgh where he has taken his medical degree, has come to pay his respects to the Governor of Assiniboia, the ranking officer of the Hudson's Bay Company. A sailing ship has brought him to York Factory on Hudson's Bay, thence he has come by canoe up the Hayes and Nelson rivers to Lake Winnipeg and up the Red River. His photograph, in my possession, shows him with the side whiskers, the black stock and the broadcloth coat of that period, but his eyes are clear and kindly, his glance direct, and his shoulders broad, so that for nearly thirty years he endures the hardships of practice in that sparsely-settled district — on horseback with his saddle-bags in the summer, and in a horse or dog-drawn carriage in the winter — the *Weelum Maclure* of the community, until apoplexy closes his busy life in 1861. This is Dr. John Bunn, the first doctor of the Canadian West.

The next scene is on the shores of Lake Winnipeg in 1876. Manitoba has now become a province of the Dominion and the fertility of the land and the wonderful possibilities of the new country have turned the eyes of many people to the last great West. Rich in the spirit of their Viking forefathers a group of fisherfolk from Iceland have settled on the west shore of Lake Winnipeg and have named the site Gimli (Paradise). But, as in the first Eden the serpent soon appeared, so trouble soon comes to this new Paradise. Hardly have they reached the spot when a terrible epidemic of small-pox breaks out. The colony is placed under quarantine, and doctors are named by the government to care for the sick. One of these, and here I quote from a personal communication from his daughter, "treated the sufferers for six months, enduring many hardships and privations for lack of the accommodations of the present day." The remainder of his life is spent in practice along the banks of the Red from his home at St. Andrews where, to quote again, "his life was not one of remuneration but just in trying to relieve the sick." For a doctor there might be many a worse epitaph than that. He is Dr. Henry Septimus Beddome, a native of London, a graduate of Guy's Hospital, who sat under Thomas Addison, John Hilton and Alfred Taylor when Guy's was at its zenith.

Move forward with me to 1883. The railway had reached Winnipeg three or four years before and there had been a boom of the first magnitude. Then in 1882 came a flood, the boom burst, and depression set in. Medical students cannot find the money to finance years of study at Edinburgh, London, or even Montreal or Toronto. They urge that a medical school be established here. A young doctor from the east arrives with the intention of starting a proprietary medical school. This does not appeal to the doctors already practising in Winnipeg; they meet, and in due time, they obtain from the Provincial Government a charter to establish the Manitoba Medical College. On November 15, 1883, the newly chosen Dean delivers the inaugural lecture to the students. Though still a man in his late twenties the speaker, an Irishman, has seen service under Lord Wolseley in the Ashanti campaign of 1873-4, is a close friend of Osler and Shepherd of McGill, and a capable disciple of Lister, whose principles are beginning to revolutionize surgery. So the infant medical school, though seeing the light of day in hard times, is born in the purple and has the inestimable advantage of a wise and prudent dean to shape its course. He is Dr. James Kerr, later professor of surgery in George Washington University at Washington, D.C., and a medical man worthy of all honour.

One of a series of advertisements prepared and published by PARKE, DAVIS & COMPANY in behalf of the medical profession. This "See Your Doctor" campaign is running in the *Saturday Evening Post* and other leading magazines.



THIS LITTLE GIRL HAS THREE PARENTS

YES, this little girl has three parents. The third parent is the family physician.

He was a part of the family even before she was. He has stood beside her since her tiny lungs let loose their first wail of protest against a new and frighteningly large world. He knows her physical history. If there are weaknesses he is aware of them and able to keep a watchful eye on them.

Through her babyhood an affectionate understanding has been growing up between them. When she's ill, this man who comes to help her is not a stranger, but a friend in whom she has complete trust. He knows her little whims and how to get around them. She knows

him and is at ease with him. She's a lucky little girl—with this third parent to watch over her, to care for her, to help her through the years that lie ahead.

Your family may not have a regular physician. Perhaps it's because you live in a large city, perhaps it's because you've moved recently and so are out of touch with your former doctor. Whatever the reason, if you do not now have a family doctor, get one. Do it now—do not let the health you enjoy today make you careless in providing this vital safeguard against the sickness tomorrow may bring. Find and become acquainted with the person to whom you can entrust the medical welfare of your family through the years to come.

PARKE, DAVIS & COMPANY, WALKERVILLE
The World's Largest Makers of Pharmaceutical and Biological Products

Ten years later. The scene is laid in the operating room of a little hospital in Medicine Hat. A London surgeon on a trip through Canada, Mr. Frederick Treves, destined to receive knighthood and become world famous as the man who operated on King Edward VII. on the eve of his coronation, is watching a young surgeon, one of the earliest graduates of this school, do a novel and original operation. The deft hands, controlled by a brilliant mind, work unerringly, the operation comes to a triumphant close, and Mr. Treves, himself the author of a *Handbook of Operations*, offers his sincere congratulations to the young Canadian surgeon in a frontier town. This, ladies and gentlemen, was the late Dr. Jack Calder, whose untimely death cut short a career of the greatest promise.

An early June morning in 1916. The Great War is now in its third year. Before the Medical College a small military unit in marching order is drawn up. A few women and children look on, interested rather in the band of the Winnipeg Grenadiers ready to head the procession than in the soldiers about to march to entrain for overseas service. Winnipeg has seen so many battalions depart that the novelty has worn off, and the capacity for heart-break has almost become exhausted. At the head of the unit in the uniform of a lieutenant-colonel is a doctor who after forming his command into a smoothly efficient force, returns to accept the even greater responsibility of the deanship of our school until his death in 1931. The band strikes up, the unit swings into step, and marches off not to return till three years later. That unit was No. 4 Canadian Casualty Clearing Station, raised and staffed by the Manitoba Medical College and the commanding officer Dr. S. Willis Prowse of revered memory.

One more episode. A congregation of hundreds of medical men and women in all the brave dignity of doctorial gowns and hoods is grouped on the steps on a noble building for religious worship. The clergyman is the Primate of All Canada, and in the congregation is the King's physician who has lately guided his royal patient safely through a most critical illness, also others whom the King has delighted to honour, and those whose names are known wherever scientists meet. The day is the 26th August, 1930, and the occasion the annual religious service of the British Medical Association holding its 98th annual meeting in Winnipeg, less than a century after the graduation of the first doctor of the Red River.

These, then, are sketches of scenes in the medical life of Western Canada. Rough and imperfect as they may be, they serve to show something of the dignity, the devotion to duty and above all the possibilities of service offered by the profession you have chosen, and of which you are about to be sealed. Henceforth you will be members of a fraternity, glorious in its traditions, jealous of its honour, but delighting to welcome within its circle those who are born into its spirit. Ladies and gentlemen of the graduating class, be assured that the Dean and members of the faculty who have been in the past your teachers congratulate you most heartily on your admission into the fraternity of medicine, and from this time on as fellow-practitioners will watch your future careers with most friendly interest. True, the times are not auspicious, but the young medical graduate endowed by nature with strong physique, trained in a good school, and determined rather to serve his fellow man than to make a living has little cause for fear. Our best wishes go with you.

—ROSS MITCHELL, M.D.

Your patient has no more right to all the truth than he has to all the medicine in your saddlebag . . . He should get only so much as is good for him.

—Oliver Wendell Holmes.

Medical Library of the University of Manitoba

A summary of the contents of some of the journals available for practitioners, submitted by the Faculty of Medicine of the University of Manitoba. Compiled by T. E. Holland, B.Sc., M.D. (Man.), F.R.C.S. (Edin.).

CANADIAN MEDICAL ASSOCIATION JOURNAL, April, 1933.

"Hyperemesis Gravidarum treated as a Temporary Adrenal Cortex Insufficiency,"
by W. M. Kemp, B.A., M.D., Vancouver.

—An article containing 8 case reports, showing excellent effects of treatment by adrenal cortex.

THE PRACTITIONER, April, 1933.

"Anæsthetics in General Practice with Special Reference to Local Analgesia,"
by C. W. Morris, O.B.E., M.B., B.S., Senior Hon. Anæsthetist, Univ. Coll. Hosp., London.

—A short article dealing first of all with pre-medication and other aids to anaesthesia, then going on to a discussion of local analgesia.

"Some Practical Points Applicable to Anæsthesia in Children,"
by Harold Sington, M.D., Senior Anæsthetist, Hospital for Sick Children, Great Ormond St., London.

—Dr. Sington discusses the various forms of pre-medication for children, and describes in detail his method of using ethyl-chloride. He says, "It has been stated that ethyl-chloride is a dangerous anaesthetic and I am anxious to emphasize that such is certainly not found to be the case after a personal experience of over sixty thousand such inductions in children without one moment of anxiety."

Other articles in this issue of *The Practitioner* are:—

"Cancer: A Review of Modern Treatment,"
by Percival P. Cole, F.R.C.S., Surgeon, The Cancer Hospital, London.

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"Acute Poliomyelitis,"
by Dr. Stewart Middleton, F.R.C.S., Asst. Surgeon, Royal Infirmary,
Edinburgh.

"The Circulatory Failure in Diphtheria and Its Treatment,"
by Francis Ind, M.D., Physician, Keycol Hill Infections Hospital, Sitting-
bourne, England.

EDINBURGH MEDICAL JOURNAL, April, 1933.

"Some Disorders of Speech in Childhood: Their Nature and Treatment,"
by Douglas Guthrie, M.D., F.R.C.S. (Edin.).
From Ear and Throat Dept. and Speech Clinic, Royal Hospital for Sick
Children, Edinburgh.

—A comprehensive discussion of this subject.

THE QUARTERLY JOURNAL OF MEDICINE, January, 1933.

"The Therapeutic Use of Drugs of the Digitalis Group,"
by Elsie Porter.

From the Cardiological Dept., Ancoats Hospital, Manchester.

—A report of an investigation dealing with "the effect of massive digitalis
dosage by mouth or by rectum, the value of massive doses of strophanthin
intravenously, and the place of action of this group of drugs."

"Linnitus Plastica: A Study of Ten Cases,"
by C. P. Howard.

From the Medical and Surgical Services of the Montreal General Hospital.

—The conclusion is drawn that the majority of cases of Linnitus Plastica
belong to the sclerosing type of carcinoma, and in the cases of so-called
fibromatosis and syphilitic leather-bottle stomachs there has been a
secondary invasion by cancer cells.

THE CLINICAL JOURNAL, April, 1933.

"Influenza,"

by T. B. Layton, M.S., F.R.C.S., Surgeon in Charge of the Throat and Ear
Dept., Guy's Hospital.

—A clinical lecture on this subject given at Guy's Hospital.

"Anaesthesia During Labour,"

by Leslie H. W. Williams, M.D., M.S., F.R.C.S., Obstetric Surgeon, Queen
Charlotte Hospital.

"Atrophy of the Testicle,"

by Alex. E. Roche, M.A., M.D., M.Ch., F.R.C.S., Asst. Genito-Urinary
Surgeon, West London Hospital.

"Common Ocular Conditions,"

by J. G. Freeman Heal, M.D., C.M., D.O.M.S.

—A good paper.

* * * * *

Recent Accessions

Session 1932-1933

Aschoff, Ludwig—Appendicitis: its etiology and pathology, tr. by G. C. Pether.
London, Constable, 1932.

Bankart, A. S. Blundell—Manipulative Surgery. (Modern surgical monographs,
G. Gordon Taylor, ed.). London, Constable & Co., 1932.

Bellingham-Smith & Feiling, A.—Modern medical treatment; with an introduction
by Sir Humphry Rolleston, 2 vols. London, Cassell, 1931.

Blanchard, Penau, et Simonnet.—La thyroïde. (Les problèmes biologiques, ser.
xvii, vol. 2). A survey of the subject. Paris, Les Presses, Université de
France, 1931.

Boyd, William.—A text-book of pathology. Philadelphia, Lea & Febiger, 1932. Gift.

British Medical Assoc.—History of the British Medical Association, 1832-1932. Comp.
by E. M. Little. London, B.M.A., 1932. Gift.

- Campbell, H.—Aids to pathology, 6th ed. London, Baillière, 1933. (Canada: Mac-Millan). Gift.
- Clarke, Ernest.—The fundus of the human eye: an illustrated atlas. London, Oxford University Press, 1931.
- Contributions to the Medical Sciences in honor of Dr. Emanuel Libman, by his pupils, friends and colleagues, 3 vols. New York, International Press, 1932. Gift.
- Cope, Zachary.—The early diagnosis of the acute abdomen. (Oxford Medical Publications), 6th ed. London, Oxford University Press, 1932.
- Coulter, Stanley—Pharmacology of the medical agents in common use. Indianapolis, Eli Lilly Co., 1932.
- Creed, R. S., Denny-Brown, Eccles, Liddell & Sherrington.—Reflex activity of the spinal cord. Oxford, Clarendon Press, 1932.
- Crowden, G. P.—Muscular work, fatigue and recovery. London, Pitman & Sons, 1932.
- Cushing, H. W.—Papers relating to the pituitary body, hypothalamus, and parasympathetic nervous system. Springfield, Ill., C. C. Thomas, 1932.
- Drummond, J. C.—Recent researches on the nature and function of vitamins. (The Cantor Lectures). London, Royal Society of Arts, 1932.
- Gabriel, W. B.—The principles and practice of rectal surgery. London, Lewis, 1932. Gift.
- Hewer, C. Langton.—Recent advances in anesthesia and analgesia. London, Churchill, 1932.
- Hitchcock, D. I.—Physical chemistry for students of biology and medicine. Springfield, Ill., C. C. Thomas, 1932. Gift.
- Howard, R. Christopher.—Bedside manners. London, Bale, 1932.
- Kaiser, Albert David.—Children's tonsils in or out; a critical study of the end-results of tonsillectomy. Philadelphia, Lippincott, 1932.
- Kerley, P. J.—Recent advances in radiology. London, Churchill, 1931.
- King, Sir F. Truby.—Feeding and care of baby. London, MacMillan, 1932.
- Krantz, ed.—Fighting disease with drugs, ed. by J. C. Krantz, jr. National Conference of Pharmaceutical Research. Baltimore, Williams & Wilkins, 1931.
- Maddox, J. Kempson.—An introduction to "Avertin" rectal anesthesia. Sydney, Australia, Angus & Robertson, Ltd., 1931.
- Moore, Robert Foster.—Medical ophthalmology, 2nd ed. London, Churchill, 1925.
- Peters, J. P. & Van Slyke, D. D.—Quantitative clinical chemistry, vol 2, Methods. Baltimore, Williams & Wilkins, 1932.
- Pittsburgh University School of Medicine.—Studies on epidemic influenza, comprising clinical and laboratory investigations by members of the faculty. Pittsburgh, University, 1919.
- Rankin, F. W., Barger, J. A., & Buie, L. A.—The colon, rectum & anus (Mayo Clinic). Toronto, McAllister, 1932.
- Rasmussen, A. T.—The principal nervous pathways. London & New York, Mac-Millan, 1932.
- Renshaw, Arnold.—Laboratory service and the general practitioner; an interpretation of pathological aids to diagnosis. London, Oxford University Press, 1932.
- The Rose Research on Lymphadenoma. Bristol, John Wright, 1932.
- Ross, Ronald.—Memoirs, with a full account of the great malaria problem and its solutions. London, John Murray, 1923.
- Rouvière, H.—Anatomie des lymphatiques de l'homme. Paris, Masson & Cie., 1932.
- Schamberg, J. F., & Wright, C. S.—Treatment of syphilis. New York, Appleton & Co., 1932.
- Smith, G. Francis.—Hints to the young practitioner. London, Oxford University Press, 1932.
- Smith, James Lorrain.—Growth, ed. by J. S. Haldane. Edinburgh, Oliver & Boyd, 1932.
- Stedman's Medical Dictionary.—11th ed. rev. New York, William Wood & Co., 1932.

Strumpell's Practice of Medicine.—29th & 30th ed. by E. Seyforth. Tr. from 30th German ed. by C. F. Marshall and C. M. Ottley. 30th ed. 3 vols. London, Baillière, Tindall & Cox, 1931.

Turner, A. L. ed.—Diseases of the nose, throat, and ear for practitioners and students, 3rd ed. rev. & enl. Bristol, J. Wright & Sons, 1932. Gift.

Wakeley & Buxton.—Surgical Pathology. Bristol, J. Wright & Sons, 1929.

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RECENT ACCESSIONS—Serials

American Laryngological, Rhinological, and Otological Society, Inc.—Transactions, 1932, vol. 38. New Bedford, The Society, 1932. Gift.

American Otological Society, Inc.—Transactions, vol. 22, 1932. New Bedford, The Society, 1932. Gift.

American Surgical Association.—Transactions, vol. 50, 1932. Philadelphia, The Assoc. and Lippincott & Co. Gift.

Association of American Physicians.—Transactions, vol. 47, 1932. Philadelphia, The Assoc., 1932. Gift.

Harvey Society, New York.—The Harvey Lectures, 1931-32, vol. 27. New York & Baltimore, The Society and Williams & Wilkins.

Imperial Cancer Research Fund.—Tenth scientific report. London, Taylor & Francis, 1932.

International Clinics.—Vol. 1-4, 42nd ser., 1932. Philadelphia, Lippincott & Co., 1932.

Inter-state Post-graduate Medical Association of North America.—Proceedings of the International Assembly. Indianapolis, The Association, 1932.

Medical Clinics of North America.—Vol 16, 1932-33. Philadelphia, Saunders, 1932.

Practical Medicine Series, 1932.—General Medicine.

General Surgery.

General Therapeutics.

Neurology; Psychiatry.

Obstetrics; Gynecology.

Pediatrics.

Radiology.

Urology.

The 1932 Year Book of Radiology. Diagnosis ed. by C. A. Waters, therapeutics ed. by I. I. Kaplan. Gift.

Chicago, Year Book Publishers, Inc., 1932-33.

Rockefeller Institute for Medical Research. — Studies. Reprints, vol. 83, 1932; vol. 84, 1933. New York, Rockefeller Institute, 1932, 1933. Gifts.

Surgical Clinics of Chicago.—Vol 2, No. 1. Philadelphia, Saunders, 1918. Gift.

United States, Public Health Service.—Annual Report of the Surgeon-General. Washington, Government Printing Office, 1931. Gift.

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RECENT ACCESSIONS—Periodicals

Archives of Ophthalmology.—Monthly. Chicago, American Medical Association, 1933.

National Health Review.—Quarterly, cont. from Abstracts of current public health literature. Ottawa, Dept. of Pensions & National Health, 1933. Gift.

MEDICAL CARE FOR CITIZENS ON RELIEF

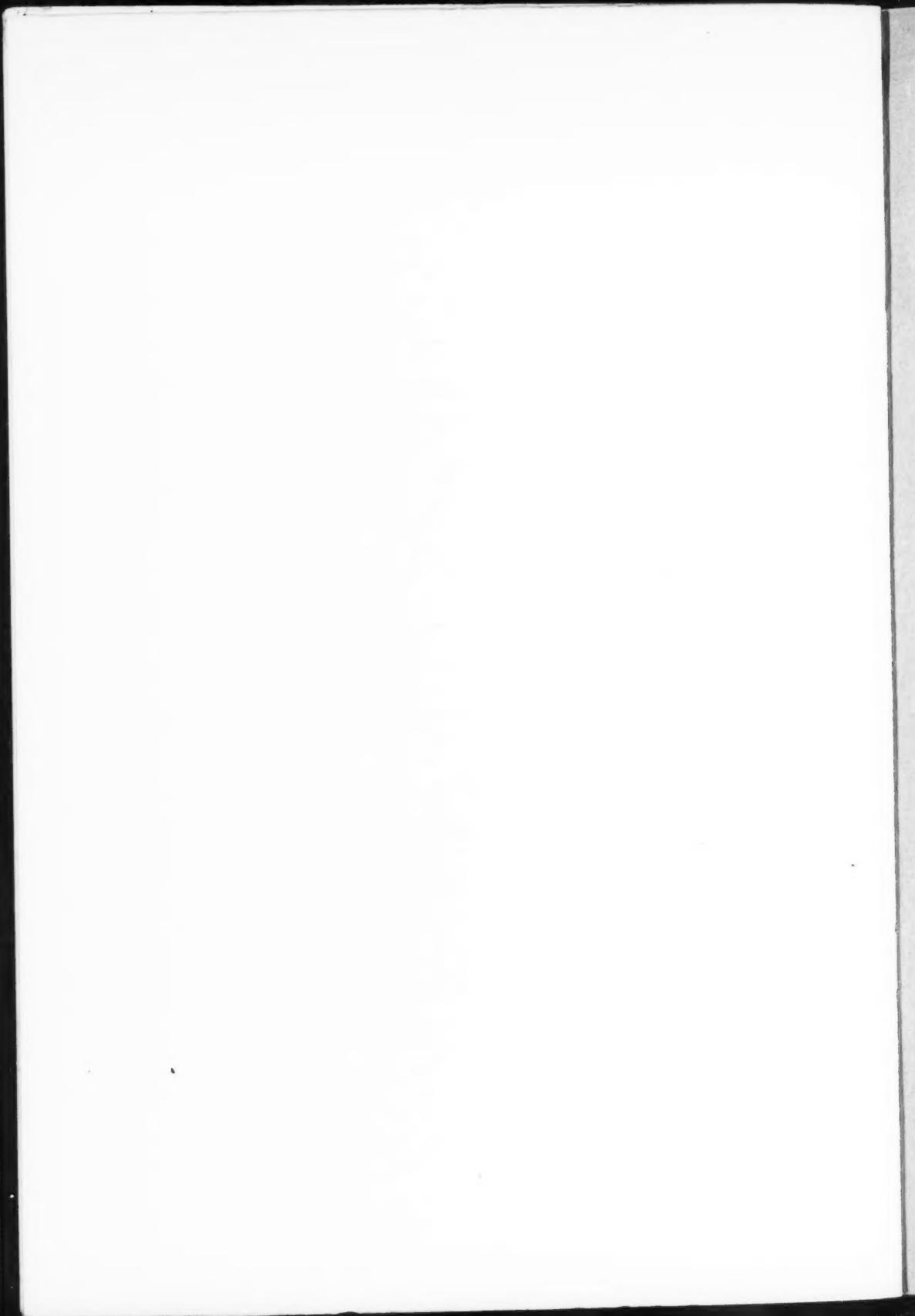
The committee representing the Manitoba Medical Association and the Winnipeg Medical Society is still carrying on negotiations with the authorities with regard to the question of medical services for people on relief. Important developments in this connection are expected in the immediate future.

Joint Committee on Amalgamation of the College of Physicians and Surgeons and the Manitoba Medical Association

THE committee have been greatly disappointed in the scarcity of replies received with regard to the memorandum submitted in the January issue of the *Bulletin*. Some real expression of opinion is desired from the general members of the profession. Would you be so good as to place an "X" opposite one of the following proposals, tear off the sheet, and mail it to the Secretary, 102 Medical Arts Building?

1. The College of Physicians and Surgeons and the Manitoba Medical Association to continue as at present, with a clearer definition of the function of each.
2. (a) The College of Physicians and Surgeons and the Manitoba Medical Association to function as separate bodies, and with a combined Executive Officer.

(b) Would you be prepared to pay the combined fee of the two Associations for this purpose?
3. All business with reference to the medical profession in Manitoba to be assumed and carried out by the College of Physicians and Surgeons, and all scientific and educational interests to be looked after by the Manitoba Medical Assn.



Clinical Meetings

At Brandon General Hospital—

2nd Wednesday at 12.30 p.m.

At Brandon Hospital for Mental Diseases—

Last Thursday. Supper at 6.30 p.m.

Clinical Session at 7.30 p.m.

At Children's Hospital—

1st Wednesday.

Luncheon at 12.30 noon.

Ward Rounds 11.30 a.m. each Thursday.

At Grace Hospital—

3rd Tuesday.

Luncheon at 12.30 p.m.

Discussion of Obstetrical Cases will form a large part of the clinical hour.

At Misericordia Hospital—

2nd Tuesday at 12.30 p.m.

At St. Boniface Hospital—

2nd and 4th Thursdays.

Luncheon at 12.30. Meeting at 1.00 p.m.

Ward Rounds 11.00 a.m. each Tuesday.

At St. Joseph's Hospital—

4th Tuesday.

Luncheon at 12.30. Clinical Session 1.00 to 2.00 p.m.

At Victoria Hospital—

4th Friday.

Luncheon at 12.00. Meeting at 1.00 p.m.

At Winnipeg General Hospital—

1st and 3rd Thursdays.

Luncheon at 12.30. Clinical Session 1.00 to 2.00 p.m.

Ward Rounds 10.00 a.m. each Thursday.

Pathological Conference at Medical College at 9.00 a.m.

Saturday during college term.

Winnipeg Medical Society—

3rd Friday, Medical College, at 8.15 p.m.

Session: September to May.

Eye, Ear, Nose and Throat Section—

1st Monday at 8.15 p.m., at 101 Medical Arts Building.

Preventing NUTRITIONAL ANEMIA in Infants through a Normal DIETARY REGIMEN

NUTRITIONAL anemia was present in 45% of the breast-fed and 51% of the bottle-fed in a group of more than 1,000 infants studied by Mackay.¹ Although this anemia was of mild degree, it was sufficient approximately to double the morbidity among the artificially fed.

Anemia Prevalent

Commenting on this work, the British Advisory Committee on Nutrition writes, "This form of anaemia is prevalent among infants, especially those living under conditions of city life, and is attributed to a deficiency of available iron and possibly also of copper. Its most important feature is susceptibility to infection, particularly a liability to colds, otorrhoea, bronchitis, and enteritis, and a tendency for infections to become chronic."²

Iron, incorporated in powdered milk, should be given as a routine to bottle-fed infants, according to the recommendations of this committee in a report to the Ministry of Health.

Milk Deficient in Iron

Stored in the liver of the full-term infant is a supply of iron and copper theoretically sufficient for the first six months of life. But actually the reserve is subject to wide variation,¹ probably because of variations in the iron content of the mother's diet during pregnancy. Hill, for example, says, "If the mother is anemic herself, or if she has eaten little iron-containing food during the last months of pregnancy, her offspring is born with an insufficient iron deposit. . . ."

	IRON	COPPER
Cow's Milk, 20 oz.	1.44 mg.	0.24 mg.
Dextri-Maltose with Vitamin B, 1½ oz.	3.60	0.855
Mead's Cereal (dry), ¼ oz.	1.70	0.09
	<u>6.74</u>	<u>1.185</u>
Daily Requirement*	4.18	"traces"

When ¼ oz. of Mead's Cereal is fed to the 3-months-old infant receiving 20 oz. cow's milk and 1½ oz. Dextri-Maltose with Vitamin B, a significant increase in iron and copper takes place.

containing standardized amounts of this mineral together with copper, can be administered as early as the third month. Clinical studies by Summerfeldt³ show that Mead's Cereal is capable of increasing the hemoglobin percentage of growing children.

* The desirable iron intake for children, according to Rose et al., is 0.76 mg. per 100 calories. Infant of 1 month (8¼ lb.) and infant of 3 months (11¼ lb.), both require 60 calories per lb.⁴

¹⁻² Bibliography on request.

MEAD JOHNSON & COMPANY OF CANADA, LTD., Belleville, Ont.

Please enclose professional card when requesting samples of Mead Johnson products to cooperate in preventing their reaching unauthorized persons

	IRON	COPPER
Cow's Milk, 14 oz.	1.01 mg.	0.166 mg.
Dextri-Maltose with Vitamin B, 1 oz.	2.40	0.570
	<u>3.41</u>	<u>0.736</u>
Daily Requirement *	3.11	"traces"

It is generally agreed that breast milk and particularly cow's milk are markedly deficient in iron and copper. But when 1 oz. of Dextri-Maltose with Vitamin B is added to 14 oz. cow's milk, properly diluted (as at 1 month), the above increase in iron and copper results.

spring is born with an insufficient iron deposit. . . ."

The trend is also toward the introduction of iron-rich solid foods at an early age. The iron content of many foods is variable, however. Leichsenring and Flor⁴ found that children's diets planned to contain 5 and 8.5 mg. iron actually contained only 3.25 and 6.5 mg., respectively. Mead's Cereal, higher than most foods in iron and